

OUTDOOR TELECOM RECTIFIER

DPU2000



DESCRIPTION

DPU2000 is a high-efficiency digital rectifier module designed for using in outdoor environment. It integrates power rectification, distribution, and monitoring. It converts AC or HVDC power into stable 54.5VDC/57VDC power, generates fault alarms, and reports monitoring data to the upstream network management system (NMS) in real time.

FEATURES

- Integrated design: power rectification, monitoring, power distribution, and surge protection
- Natural cooling
- Compact and lightweight design
- Mounting on a pole, wall, channel steel, or angle steel
- Allows parallel operation of multiple rectifiers and lithium batteries
- Same set of mounting kits for all scenarios, survey-free
- Quick connectors for input, output ports, and communication ports, which are foolproof and prevent reverse connection
- Online expansion to increase loading capacity and backup time
- Remote monitoring

AC INPUT	
Rated voltage	220VAC, single phase
Voltage range	85VAC ~ 300VAC
Frequency range	45Hz ~ 65Hz
Power factor	≥ 0.99 (100% load)
THD	≤ 5% (100% load)
HVDC INPUT	
Voltage range	90VDC ~ 400VDC
DC OUTPUT	
Rated voltage	54.5VDC or 57VDC
Voltage range	42VDC ~ 58VDC
Rated power	2000W (176–300VAC) 1000W (90–110VAC)
Efficiency	≥ 93% (220VAC, 30% load) ≥ 96% (220VAC, 50% load) ≥ 95% (220VAC, 100% load)
Voltage stabilization	≤ ±0.6%
Ripple and noise	≤ 200 mVp-p
Current sharing imbalance	< ±5% (20%–100% load)
MISCELLANEOUS	
Dimensions (HxWxD)	420mm x 60mm x 300mm (excluding terminals)
Weight	7.5 kg
Protection level	IP65
MTBF	500,000 hours (25°C ambient temperature)

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PROTECTION PARAMETERS

AC input overvoltage	Protection trigger: $\geq 298\text{VAC}$ Recovery range: $290\text{VAC} \sim 298\text{VAC}$
AC input undervoltage	Protection trigger: $\leq 85\text{VAC}$ Recovery range: $85\text{VAC} \sim 90\text{VAC}$
DC input overvoltage	Protection trigger: $\geq 410\text{VDC}$ Recovery range: $400\text{VDC} \sim 410\text{VDC}$
DC input undervoltage	Protection trigger: $\leq 85\text{VDC}$ Recovery range: $85\text{VDC} \sim 90\text{VDC}$
Output overvoltage	Protection trigger: $56\text{VDC} \sim 60\text{VDC}$ (can be set via settings) Default: 59.5VDC
AC surge	Differential mode: 30 kA Common mode: $30\text{ kA}, 8/20\ \mu\text{s}$
DC surge	Differential mode: 10 kA Common mode: $20\text{ kA}, 8/20\ \mu\text{s}$
Safety standards	IEC62368-1, IEC/EN 60950-22, IEC60950-1, GB4943-2011, YD/T 1436-2014

ENVIRONMENT

Cooling	Natural (fanless design)
Operating temp range	$-40^{\circ}\text{C} \sim +55^{\circ}\text{C}$
Storage temp range	$-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$
Humidity (operating and storage)	$5\% \sim 95\%$ (no condensation)
Altitude	$\leq 4000\text{m}$ ($2000\text{m} \sim 4000\text{m}$ operating temp drops 1°C per 200m)

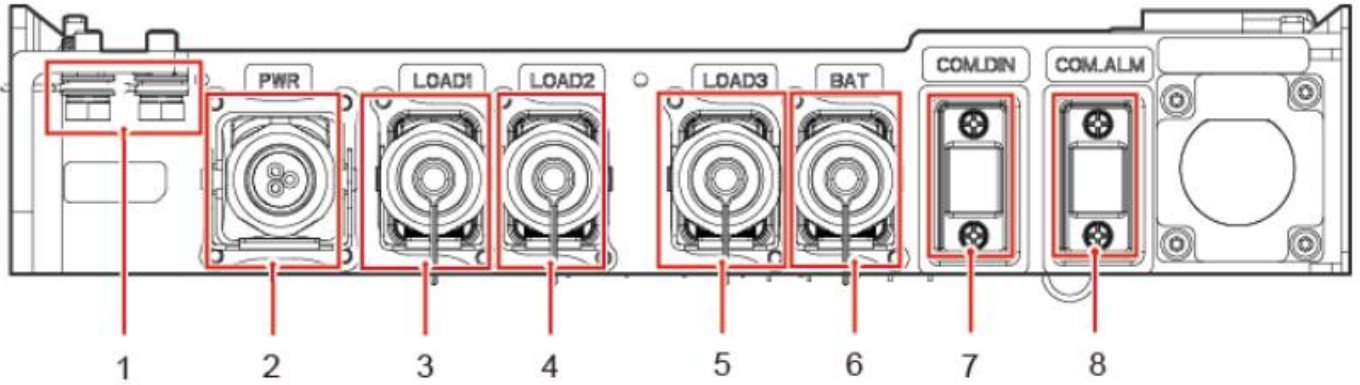
EMC

Conducted emission (CE)	AC input: class B, EN55032 HVDC input: class A, EN55032 DC output: class A, EN55032
Radiated emission (RE)	Class B, EN55032
Harmonic current	IEC 61000-3-2
Voltage fluctuation and flicker	IEC 61000-3-3
ESD	IEC 61000-4-2 Contact discharge: 6 kV Air discharge: 8 kV
Electrical fast transient (EFT)	IEC 61000-4-4 AC power port: $\pm 2\text{ kV}$ DC power port: $\pm 2\text{ kV}$ Signal port: $\pm 1\text{ kV}$
Radiated susceptibility (RS)	IEC 61000-4-3 $80\text{ MHz to } 2.7\text{ GHz}: 10\text{ V/m}$ $2.7\text{ GHz to } 6\text{ GHz}: 3\text{ V/m}$
Conducted susceptibility (CS)	IEC 61000-4-6 Power port: 10 V Signal port: 10 V
Surge susceptibility	IEC 61000-4-5 AC power port: 6 kV in differential mode, 6 kV in common mode, $1.2/50\ \mu\text{s}$ DC power port: 2 kV in differential mode, 4 kV in common mode, $1.2/50\ \mu\text{s}$ Signal port: 0.5 kV in differential mode, 2 kV in common mode, $1.2/50\ \mu\text{s}$
Voltage dip	IEC 61000-4-11

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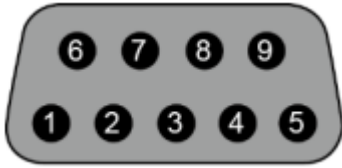
- (1) GND screws (2) AC input (3) Load port 1
- (4) Load port 2 (5) Load port 3 (6) Battery port
- (7) COM_DIN port (8) COM_ALM port

Port	Fuse capacity	Function
PWR	16A	AC or HVDC input
LOAD1, LOAD2, LOAD3	30A	DC output
BAT	-	Battery port

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COM_DIN



Pin	Signal	Description
1-7	NC	NC
8	CANH	CAN data send/receive HIGH
9	CANL	CAN data send/receive LOW

COM_ALM



Pin	Signal	Description
1	ALM1+	AC outage alarm
2	ALM1-	
3	ALM2+	DPU fault alarm
4	ALM2-	
5	ALM3+	Battery fault alarm
6	ALM3-	
7	RS485_TX+	RS485 transmits data POSITIVE
8	RS485_TX-	RS485 transmits data NEGATIVE
9	RS485_RX+	RS485 receives data POSITIVE
10	RS485_RX-	RS485 receives data NEGATIVE
11	NC	NC
12	ALM4+	DPU or battery generates an recoverable alarm
13	ALM4-	
14	CANH	CAN data send/receive HIGH
15	CANL	CAN data send/receive LOW

IMPORTANT NOTE!

ALM1-ALM4 use variable resistance to indicate an alarm.

High resistance: ALARM

Low resistance: NORMAL

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COMMUNICATION PORTS

Port	Communication parameters	Protocol	Function
COM_DIN	-	CAN2.0	Communicates with a lithium battery or a cascaded PSU
COM_ALM	Baud rate: 9600 bit/s, 19200 bit/s, 115200 bit/s, auto-negotiation	Slave protocol/BIN protocol	Communicates with upstream monitoring equipment
	-	CAN2.0	Communicates with a cascaded PSU

LIST OF AVAILABLE ALARMS

Alarm type	Alarm
DPU fault	Rectifier Fault/Address Conflict/SMU Fault
Battery fault	Board Hardware Fault/Heater Fault/Battery Cell N Fault/Address Conflict
Recoverable DPU alarm	Rectifier Protection/Rectifier Shutdown/Communication Failure/Rectifier Power Failure/Parallel Fail/AC Overvoltage/AC Undervoltage
Recoverable battery alarm	Discharge Overcurrent Protection/Charge Overcurrent Protection/High Temperature protection/Low Temperature Protection/Abnormal Close/Charge Overcurrent Protection/Discharge Overcurrent Protection

TYPICAL SYSTEM CONFIGURATIONS

Number of loads	Number of DPUs (pcs)	Number of batteries (pcs)	Power backup capacity (Wh)
3	1	0	0
6	2	0	0
3	1	1	2400
3	1	2	4800
3	1	3	7200
6	2	1	2400
6	2	2	4800
6	2	3	7200
12	4	4	9600

PARALLEL CONNECTION DERATING

Number of DPUs	Power
1	2000W
2	3800W
3-4	3000W x Number of DPUs x 0.8

Number of batteries	Power
1	3000W
2	5700W
3-4	3000W x Number of batteries x 0.8